Dividend Policy as Determinant of Stock Prices Volatility: Comparative Analysis of Financial Sectors in Pakistan

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Abstract

The aim of current study is to inspect the link between dividend policy and stock price volatility by using the data of commercial banks of Pakistan and further compare different financial sectors to find out their stock prices' behavior towards dividend policy. Panel data techniques are utilized for estimating the models in order to investigate the association between dividend policy and stock price volatility. We found a positive and statistically significant impact of dividend policy on stock price volatility in the case of commercial banks. For the Modaraba's companies, the study found a negative and significant relationship between dividend policy and stock prices volatility. In the case of Insurance companies, the findings of the study are mixed. A positive and significant relationship was observed between dividend yield and stock prices volatility while the relationship between dividend payout ratio and stock prices volatility was found be insignificant. Further, for Mutual Funds, the study found a positive and significant relationship between dividend payout ratio and stock price volatility. Lastly, an insignificant impact is observed that dividend yield has on stock prices volatility. The paper found that the behavior of dividend policy is different among the different financial sectors in determining the stock prices. The authors have compared different financial sectors to find out the responses of dividend policy in terms of stock price volatility and hence the results of the study would be useful for different stakeholders in the financial sector.

Keywords - Dividend policy, Financial sectors, Share price volatility

1. Introduction

Dividend policy is defined by the corporate finance as the decisions taken by the companies about the amount of payment of dividend that will satisfy the shareholders. It depends upon the decision makers that whether dividend payments are made or earnings are retained for business activities. This subject matter is however open for debate and exploration due to contradictory nature of association between dividend policy and share price volatility. Such as Hshemijoo et al. (2012), Modigliani and Miller (1961) and Lehman (1993) demonstrated that stock prices are irrelevant to the dividend policy. While Gordon and linter (1963) supported the view that stock prices relevant to the dividend policy.

There are diverse views of researchers regarding dividend payment decisions and stock price volatility. The novel work of Modigliani and Miller (1958) on this subject is an outset. The basic theme of Modigliani &Miller's research study was presented as theory of irrelevance which depicted that share price is independent of dividend policy and the volatility depends upon the earnings of the firm. Further, Miller and Rock (1985) affirmed the results reported by Modigliani &Miller could only be true in a case when stockholders have information

asymmetry about the financial position of the firms. Payments of huge amount of dividends will trim down risk and therefore, affect the stock prices concluded by Gordon (1963). Likewise, Baskin (1989) documented that dividend payments are used as proxy for the future earnings as it portrays the financial position of the firms.

The available empirical literature regarding the possible relationship between dividend policy and stock price volatility is indeed rich. Many scholars have found the effect of dividend policy measures on stock prices volatility but there were no decisive findings. Dividend policy remains an unclear issue whether it affects the stock prices or not. The Modigliani &Miller theory (1961) suggested that dividend policy is irrelevant to the stock prices while De Angelo et al. (1996) documented that it is relevant to the share price volatility.

The findings also vary in different security markets of different countries because of varied financial systems and economic positions. It has been seen that regular announcement of dividend and best bang for buck leads towards increase in firm's value. This concept was supported by Gordon (1959, 1963) and Linter (1962) and they demonstrated that dividend policy affects the firms' value and increase in dividend payout increases the firm's value. The uncertainty about future earnings is reduced by paying high dividend payouts. Many of the previous scholars emphasized on two measures of dividend payments and inspected their effects on risk in share prices as Habib et al. (2012), Hshemijoo et al. (2012), Ramadan (2013) and Duke et al. (2015). Dividend payout ratio is the important determinant of share price volatility as more the payout ratio less will be the share price volatility by Hussainey et al. (2011).

Pakistan is a country where its economy is going through several ups and downs due to several reasons like inflation, unemployment, political instability etc. The stock market of Pakistan is also suffering since many years and has experienced crises in 2002, 2005, 2006 and then in 2008. Because of huge difference among the economies, dividend policy is treated differently in case of Pakistan. Therefore, the current study would be indeed useful for different stakeholders in the financial sector in general and investors in particular.

This remaining of this paper is organized in the following manner. Relevant literature both theoretical and empirical is presented on the subject discussed in this paper is presented in section two. Section three of the paper is devoted to model and methodology used in the model to extract results. Descriptive statistics are used to describe the data and correlation matrix is presented in section four. In the penultimate section, the regression based results are discussed and analyzed. The paper is concluded along with recommendations in the final section.

2.1 Empirical Literature (Stock price volatility and dividend policy)

Dividend policy considered as an important element to determine the stock value. Many studies have been carried out on this subject by various influential researchers such as Hussainey et al. (2011), Habib et al. (2012), Zakaria et al. (2012), Hshemijoo et al. (2012), Ramadan (2013) and Duke et al. (2015) to examine the influence of dividend policy on stock

market risk and found mixed results about the effectiveness of dividend policy in volatility of stock prices.

Some of the financial literature suggests that dividend policy does not influence the stock prices and they acknowledge the Miller and Modigliani theorem which depicts that stock prices are not affected by dividend policy under a certain set of assumption(Hshemijoo et al. 2012; and Lehman 1993) but on the other hand bird in the hand theory strongly supports the facts that stock prices are affected by paying dividend as discussed by Habib et al. (2012).Moreover, Sharif et al. (2015)found an insignificant link of dividend per share with share prices. Likewise, Khan (2011) argued that the irrelevant theories of dividend policy do not support the chemical and pharmaceutical firms of Pakistan. Rehman and Rashid (2009) also conducted an affirmative and insignificant association between stock price risk and dividend yield. Contrary to these studies, stock prices volatility is not affected by dividend yield as identified in Allen and Rachim (2010).

Duke et al. (2015), Hussainey et al. (2011) , Powell and Baker (2012) documented the same results and suggested the positive and significant relationship between dividend yield and share prices asserted that dividend policy is an important factor in determining the share prices. Wu and Chen (1999) and Lonie et al. (1996) also in line with the concept that dividend announcements have impact on shareholders returns. Good news results in large abnormal returns and bad news results in small amount of abnormal returns. Apposing these studies, Twaijry (2007) and Lehman (1993) stated that asset prices remain unchanged with respect to dividend policy.In another study focusing on Nigerian stock market by Wodung and Maimako (2010), suggests that dividend policy and its relative measures have a significant detrimental effect on stock price volatility. Conclusively it was recommended that independent variables like dividend yield show a negative effect on share price volatility, it is advisable for the fund managers to control and limit stock price volatility by astute use of dividend policy. This discovery can encourage investors to use dividend policy measures for investing in stocks and shares which represent low volatility in market. Still another study from Nigeria by Sulaiman and Migiro (2015) which delineates the effect of dividend policy on the share price in the said country showed vivid picture of effects of changes in dividend policy in relation to fluctuation of stock price changes. However on the whole the study does support the dividend hypothesis and also indicates that performance of stock is positively affected by a raise in dividend payout ratio.

Empirical evidence from Pakistan also bears same results. As a study conducted by Asghar et.al (2011) highlights effect of design of dividends on risk associated with share price, or the other way round, stock price volatility. The results were quite in consistency with the previous literature and it was suggested that there exists noteworthy correlation between price risk and dividend payments. Likewise, Sen and Ray (2003) in their study had tried to evaluate the most imminent determinants of share price in India. The end result of the study suggested that DPR is the most significant determinant of share price volatility and the second most imminent determinant of share price change is earning per share. Supporting the Linter model, Bhattacharya (1979) documented that announcements of dividend interpreting

information about the future endeavors of the firm and hence, forecasts the future prospects of the company. Linter's (1956) model has been provided basis for number of studies such as Gordon (1959) and Walter (1963) and Miller and Modigliani (1961).

2.2 Theoretical Evidence

Dividend is the periodic payments given to the shareholders in return of their investments. However, companies are torn between dividend payments to shareholders and reinvestments in business in order to enhance the growth. Dividend policy theories are therefore argued the rationale payments of dividends. Miller and Modigliani (1961) demonstrated the new wave of finance that dividend policy is irrelevant to the stock prices under certain set of assumptions. They suggested that dividend policy does not affect the stock prices, because capital gains and dividends are equivalent and investors don't have preference whether to go for capital gain or dividend by Habib et al. (2012).

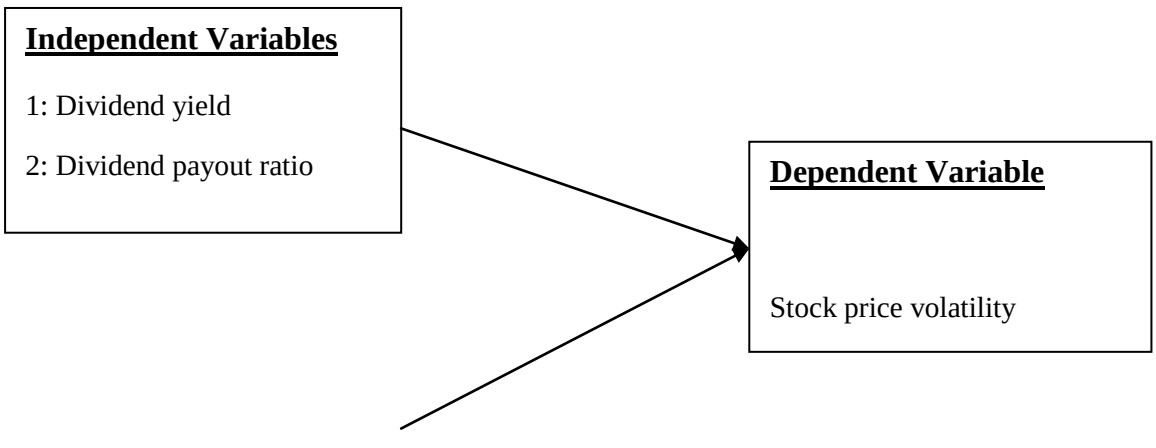
Suwana (2012) worked on the basis of signaling theory of dividend policy. A firm takes its decision about announcements of dividend are the signals to the market that depicts the future prospects of the firm and it led to change in stock prices of the firm. Anwar et al (2015) described the signaling theory based results by conducting event study.

The Gordon/Linter Bird in the Hand theory was proposed by Gordon (1959, 1963) and Linter (1962).The view of this theory depicts that dividend policy affects the firms' value and increase in dividend payout increases the firm's value. The uncertainty about future earnings are reduced by paying high dividend payouts so that investor prefer "birds in the hand" that is dividend than "two in the bush" that is capital gain stated by Malkawi et al. (2010).They documented that dividend yield affected the stock prices instead of capital gains.

3.1 Modelling and Methodology

The main aim of this paper is to see how the stock price volatility responds to changes in dividend policy. Dividend policy is going to be measured in two ways in current study namely dividend yield and dividend payout ratio. However, beside dividend policy, there are some other contending variables that may influence the stock price volatility on one way or the other. In the literature different factors such as earning volatility, growth rate, size of the firm and debt are included in models to observe their possible impact on stock price volatility. The arguments presented are conceptualized as shown as following.

Figure 1: Conceptual Framework



Control Variables

1: Earning volatility

2: Debt

3: Size

4: Growth in assets

The conceptual framework presented above (Figure 1) depicts the possible impact that dividend policy and other determinants have on the stock price volatility. Dividend policy is captured by using dividend yield and dividend payout ratios. Control variables such as debt ratio, volatility in earnings, growth in assets and size of the company are included among the independent variables because of their likely impact on stock price volatility. Based on the conceptual framework presented in Figure 1, the following hypotheses are specified to be tested by the current study.

H_1 = There is positive relationship between dividend policy and stock prices volatility.

H_2 = The impact of dividend policy on stock price volatility is similar in four financial sectors.

In the next step, to test the hypothesis specified based on the conceptual framework (Figure 1), the following regression model is specified which is the empirical form of the conceptual framework.

$$PV_{it} = \beta_0 + \beta_1 DP_{it} + \beta_2 DY_{it} + \beta_3 EV_{it} + \beta_4 SIZE_{it} + \beta_5 Debt_{it} + \beta_6 growth_{it} + U_{it} \quad (1)$$

Where PV stands for the dependent variable and it measures the stock price volatility. The subscript (i) and (t) are used to identify the cross-sectional and time dimension of the panel data. DP depicts Dividend payout ratio where DY stands for dividend yield and both are used as independent variables interchangeably. EV is the earning volatility, SIZE is the size of the firm and Debt is taken as long term liabilities. Growth stands for growth in assets. The term U stands for error term. The subscript (i) and (t) are used to identify the cross-sectional and time dimension of the panel data. Data has been gathered from PSX, website of business recorder and the annual reports of the firms. The data for stock prices has been gathered from the websites of Business Recorder and PSX, where data steam for highest, lowest and closing prices are available. The stock prices are collected on annual basis. The data for the proxies for dividend policy and other control variables such as debt ratio, volatility in earning, asset growth has been gathered form state bank analysis reports and companies' annual financial reports.

3.2 Estimating Strategy

The data which is going to be used to estimate model 1 is basically longitudinal or panel in nature owing to both cross sectional dimension and time dimension. For panel data, usually

fixed effects estimation or random effects estimation techniques are in use in the econometric literature. Both the models have their advantages as well as the disadvantages. According to Hill et al., it is always to safer to use the fixed effects model instead of random effects model because of the likely correlation between the independent variables and the error term. However, choosing an appropriate estimating technique shall be made using the Haussmann specification test which is specially designed for choosing between the fixed effects and random effects techniques see (Tahir and Azid;2015). Similarly, the presence of time dimension and cross section dimension may lead to both heteroscedasticity and serial correlation as well. Therefore, models will be estimated using the White Cross Section Robust standard errors in order to take care of both the mentioned problems.

Before going for model estimations the mentioned techniques, we report the descriptive analysis of the data in order to know about the behavior of the variables over the years.

4.1 Descriptive Analysis

Table 1 showed a wide depiction of information about variables taken in current research study. Different measures such as mean, maximum and minimum values are reported in Table 1 in order to describe the data.

Table 1: Descriptive Statistics

	PV	DY	DP	LNSIZE	DEBT	GROWTH	EV
Mean	0.047	0.075	0.541	17.577	0.0093	0.164	0.001
Maximum	0.406	0.191	0.941	19.645	0.0234	1.205	0.012
Minimum	0.000	0.008	0.085	14.682	0.0006	-0.021	0.000
Std. Dev.	0.048	0.042	0.178	1.165	0.0056	0.149	0.002
Observations	81	81	81	81	81	81	81

In Table 1, descriptive statistics of the variables selected for the study are reported. It can be seen from the Table 1, that the average value of the PV is (0.047) with a standard deviation of (0.048). The values of PV are ranging between (0.00) and (0.406). The average value of DP is (0.54) that depicts the mean value for dividend payout ratio of Commercial banks for the nine years and dispersion from mean is (0.178) with lowest value of (0.085) to highest value (0.941). So, it could be predicted that the future value of DP could diverge on the given average. Likewise, average of DY is (0.075) and its deviation from the average is (0.042). Debt range starts from (0.0006) to (0.023) for the selected period of time and mean value is (0.009) with deviation of (0.005). The mean value of size is (17.577) and standard deviation is (1.165) along with range of lowest value is (14.682) and highest value is (19.645) respectively.

4.2 Correlation Analysis

The correlation among the variables is depicted in Table 2. It could be seen from Table 2 that there has been affirmative and significant association between PV (Price volatility) and DY

(Dividend yield) with the value of 0.254 which is in line withHusseiney et al. (2011).The outcome shows that high dividend yield results in high share price risk and vice versa. Dividend payout ratio also shows positive association with stock price volatility at 5 percent significance level in contrast with Husseiney et al. (2011). An inverse and significant link has been inspected between size of the firm and the price volatility with the correlation value of -0.537. There has been affirmative and insignificant link of debt and share price volatility. Furthermore, earning volatility and growth are correlated with dependent variable insignificantly.

Table 2: Correlation Matrix

Correlation Matrix							
	PV	DY	DP	LNSIZE	DEBT	GROWTH	**EV**
PV	1						
DY	0.254**	1					
DP	0.223**	0.587***	1				
LNSIZE	-0.537***	-0.217*	-0.022	1			
DEBT	0.070	0.030	-0.081	-0.418***	1		
GROWTH	-0.017	-0.267**	-0.035	0.062	0.084	1	
EV	0.165	0.451***	0.260**	-0.058	-0.185*	-0.188*	**1**

Significance at: ***1% level, **5% level, *10% level

5. Regression Analysis

After discussing the descriptive statistics and correlation, in the next step we move towards the regression results. As mentioned in the methodology section, choosing an appropriate modeling strategy is done with the help of Haumsan specification test. In the case of using the DP, the Hausman test provided evidence to use the random effects modeling procedure. On the other hand, in the case of DY, the Hausman specification test suggested to use the fixed effects modeling approach owing the likely correlation between the independent variables and the disturbance term. Results are presented in the following Table 3.

Table 3: Main Regression Results

	Commercial Banks		**Insurance Companies**		**Modarabas**		**Mutual Funds**	
Variables	FEM	REM	REM	REM	FEM	FEM	FEM	FEM
DP		0.045*		-3.40E-05		-0.001***		0.007**

DY	0.319*	___	0.040*	___	-0.035***	___	-0.025	___
LNSIZE	-0.016**	-0.022**	-0.014***	-0.016***	-0.092***	-0.089***	-0.025***	-0.018***
Growth	0.029*	0.015	-0.001*	-0.001*	-0.010	-0.012	-0.044***	-0.056***
EV	-1.396	0.702	0.206**	0.207**	1.265	1.172	0.150***	0.129***
Debt	-0.544	-0.720	-6.37	0.001	0.085***	0.081***	-0.601***	-0.835***
C	0.314	0.415	0.246	0.279	1.198	1.159	0.472	0.373
R-squared	0.468	0.443	0.435	0.422	0.856	0.856	0.735	0.746
Adjusted R-squared	0.365	0.335	0.398	0.384	0.832	0.832	0.657	0.670
F-statistics	4.54	4.100	11.59	10.98	36.022	36.115	9.389	9.913
Prob.(F-statistics)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Significance at: ***1% level, **5% level, *10% level respectively. The dependent variable is the stock price volatility. Coefficients are reported in the Table along with their significance level.

In Table 3, regression results for four financial sectors have been presented. Column two and three presents the regression results for commercial banks with both the proxies used to measure the dividend policy. The results show that dividend payout ratio (proxy for dividend policy) has a positive and significant influence on stock prices volatility which means higher the dividend payments, the higher will be variation in stock prices of the commercial banks. Increase in dividend payments or constantly payments will result in changes in stock prices accordingly. Size has inverse but significant influence on the share price risk. Which depicts that increase in number of outstanding shares will decrease the variations in stock prices volatility. The results also revealed that growth and earnings volatility have influenced stock prices volatility positively but statistically insignificantly. Growth in assets and changes in earnings have no effect on stock prices volatility. Debt has also insignificant and negative impact on stock price risk.

The expected coefficient of dividend yield has been obtained as per expectations i.e. dividend yield is affirmatively and significantly related with stock price volatility in contrast with the findings of Husseiney et al. (2011), Nazir et al.(2011) in case of commercial banks. And it has been concluded that dividend policy is influential for stock price volatility as 1 percent change in dividend yield cause about 31 percent variation in stock prices volatility of the commercial banks.

Column fourth and fifth represent the results for insurance companies. The result suggested that about four percent variations in stock prices caused by one percent change in dividend yield. It is also observed that Dividend yield is positively related with stock price volatility and this relationship is statistically different from zero at standard level of significance. Similarly, earning volatility has also affirmative influence on stock price risk, while other control variables such as size, growth and debt ratio have negative influence on stock price risks. Again by applying random effect regression model it has been concluded that dividend payout ratio has an inverse but insignificant effect on stock price volatility. Size has been found inversely and significantly related with stock price variations. Moreover, volatility in earning, debt ratio and growth in assets has also the same effects as size has.

For the modarabas, column sixth shows the results. It can be revealed that it has an inverse and significant link with stock prices volatility which is unexpected. Size of the firm and growth has also inverse effect on stock price risk. Which depicts that larger the modarbas companies, less will be the stock price volatility. It is also observed that debt has an affirmative and significant relationship with stock price volatility. In column seven, random effect model shows that the coefficient of dividend payout ratio inversely but significantly linked with share price risk which means paying dividends to shareholders resulted in lower the stock price risk. Size has also inverse and significant association with stock price risk as it shows 8 percent variation in stock prices. Results suggested that small firm size has high risk in stock prices and vice versa. Likewise, growth in assets has also inverse influence on stock price risk. In contrary, and debt affirmatively linked with stock price risk.

Results for the mutual funds are reported in column eight and nine. It can be observed that the stock prices volatility is inversely related with dividend yield. Higher the dividend payments less will be stock prices volatility, About 6 percent variation has been seen in stock prices by debt and it is negatively linked with stock prices volatility. It implies that in case of insurance companies, higher the debt, lower will be the stock price volatility. Likewise, growth is also negatively linked with stock price risk. In contrast, earnings volatility has affirmative effect on stock price risk. In case of using dividend payout ratio as proxy for dividend policy, outcomes revealed the positive link of stock price volatility with dividend payout ratio. Results showed that growth, debt and size are inversely and significantly related with stock price variations. While earnings volatility insignificantly linked with stock price risk.

Overall, it could be concluded that a positive and significant relationship between dividend policy and stock prices volatility has been seen in case of commercial banks. For the

Modarabas, the study found a negative and significant relationship between dependent and independent variables while mutual funds and insurance companies showed mixed results.

The value for probability of F-statistics which is also known as the joint significance test shows that the estimated models fit the data well in all cases. The value of Adjusted R-squared is also reasonably high showing that the fitted models explain considerable variation in the dependent variable (stock price volatility) quite well. It's value variates between 0.33 in the case of insurance companies to 0.83 for the model which is estimated for Modarabas.

6. Conclusion

The purpose of current study was to conduct an empirical research study to see the influence of dividend policy on stock price volatility of commercial banks of Pakistan. It also intends to compare the different financial sectors while testing the link of dividend policy with stock price volatility. Two main proxy variables have been used to measure the dependent variable; dividend yield and ratio of dividend payout ratio. Some control variables such as debt, earning volatility, growth in assets and size of the firm have also been used in the empirical specification. Panel data regression techniques, descriptive statistics and correlation have been used to analyze the data. The sample selected for the study is consisting of commercial banks listed at PSX to check the linkage between dependent and independent variables and for sector analysis, financial firms from four financial sectors listed on PSX have been used. The time period of the study has been selected from 2006-2014 owing to data availability.

In the case of Commercial Banks, the study observed a positive and significant impact of dividend policy on stock price volatility which is in line with Duke et al.(2015), Illaboya and Aggreh(2013). For the Modarabas companies, it is observed that the relationship between dividend policy and stock price volatility is not only negative but also statistically different from zero. On the other hand, in the context of the Insurance Companies, a significant positive impact is found between dividend yield and policy and stock price volatility while the relationship between dividend payout ratio and stock price volatility was negative but however remained insignificant. Moreover, for Mutual Funds, it is found that the impact that dividend payout ratio has on stock prices volatility is positive and significant have positive and significant relationship with dividend payout ratio and insignificant relationship with dividend yield on stock prices volatility. Lastly, an insignificant relationship was found between dividend yield and stock prices volatility. To conclude the paper, we found that the behavior of dividend policy is different among the different financial sectors in determining the stock prices. Therefore, the findings of the current study would be indeed useful for investors specifically.

In terms of implication, Managers should focused on appropriate dividend policy which best suits their firms, as investors pay close attention to their dividend returns and riskiness of their investments may affect the firm's value. This makes the volatility of stock prices as important as it is to investors. Investors should select the sector for their investments which best suits their level of risk tolerance.

Appendix 1

Table 4: Variables and Description

Variable	**Definition**
Stock Price Volatility	Stock Price Volatility is equal to annual range of stock prices is divided by the average of the high and low prices obtained in the year, raised to the second power.
Dividend Payout Ratio	Dividend payout ratio is calculated as dividend per share is divided by earning per share
Dividend Yield	Dividend yield is obtained by dividing dividend per share over price per share.
Size	Size is taken as outstanding shares of the firms multiplied by current prices of the shares as recommended by Hussieney et al. (2011).
Earning Volatility	The ratio of EBIT that earnings before interest and taxes called as gross income to total assets is estimated for given years and then the find the geometric mean collectively for all available periods. And then take the moving standard deviation of that ratio.
Long Term Debt	This ratio can be obtained by dividing the long term liabilities to total assets of the firm.
Growth in assets	It has been calculated as change in assets at the starting of the year and then divided it by grand assets by the ending of that year.

Table 5: Haussmann Test for Regression Analysis

	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	Effect
Commercial Banks					
DY	Cross-section random	14.054973	5	0.0153	RE Rejected
DP		3.746336	5	0.5865	FE Rejected
Insurance Companies					
DY	Cross-section random	0.509955	5	0.9918	FE Rejected

DP		1.033115	5	0.9599	FE Rejected
Modarabas					
DY	Cross-section random	9.990135	5	0.0755	RE Rejected
DP		13.873904	5	0.0164	RE Rejected

*Fixed Effect has been used in case of Mutual Effect due to short no. of observations.